

read the LOW voltage (with the forward voltage drop of the diode added) when the corresponding column is driven LOW.

IN THE CLAIMS

Kindly cancel claims 2, 3, 7 and 11-13, without prejudice.

Kindly amend the claims as follows:

Clean Version of Claims

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Dy
1. A switch matrix, comprising:
at least one row conductor;
at least one column conductor, wherein each of said at least one row conductor and said at least one column conductor are capable of being driven with a predetermined voltage level, and being capable of being read therefrom a voltage level; and

a plurality of switching elements adapted to connect said at least one row conductor to said at least one column conductor, said plurality exceeding a number obtained by multiplying together a number of said at least one row conductor and a number of said at least one column conductor.

29 2. 4. The switch matrix according to claim 1, wherein:
at least one of said plurality of switching elements is a temporary connection type switching element.

3 3. 5. The switch matrix according to claim 1, wherein:
at least one of said plurality of switching elements is a momentary switch.

4 6. The switch matrix according to claim 1, wherein:
at least one of said plurality of switching elements is a persistent connection type switching element.

5 ~~8~~. The switch matrix according to claim 1, wherein:

a10 said plurality is twice a number obtained by multiplying together said number of said at least one row conductor and said number of said at least one column conductor.

Sub B1 ~~9. A switch matrix, comprising:~~

a plurality of row conductors;

a plurality of column conductors; and

a plurality of switching elements including at least one momentary push button adapted to connect at least one of said plurality of row conductors to at least one of said plurality of column conductors,

wherein a total number of switching elements of said plurality of switching elements exceeds a product of a total number of row conductors of said plurality of row conductors and a total number of column conductors of said plurality of column conductors.

Sub B2 ~~14. A switch matrix, comprising:~~

a plurality of row conductors;

a plurality of column conductors;

a11 at least one momentary switching element adapted to momentarily connect at least one of said plurality of row conductors to at least one of said plurality of column conductors; and

at least one persistent switching element adapted to persistently connect at least one of said plurality of row conductors to at least one of said plurality of column conductors.

9 ~~15~~. The switch matrix according to claim ~~14~~, wherein:

said at least one momentary switching element includes at least one push.

211 Sub B3

16. A method of scanning a switch matrix, comprising:

driving one at a time each of a plurality of row conductors with a predetermined row voltage level;

monitoring each of a plurality of column conductors while one of said plurality of row conductors is being driven with said predetermined row voltage level;

driving one at a time each of said plurality of column conductors with a predetermined column voltage level; and

monitoring each of said plurality of row conductors while one of said plurality of column conductors is being driven with said predetermined column voltage level.

Sub 10

17. The method of scanning a switch matrix in accordance with claim 16, further comprising:

detecting a closure of a first one of a plurality of switching elements based on a presence of said predetermined column voltage level during monitoring of said plurality of row conductors; and

detecting a closure of a second one of a plurality of switching elements different from said first one of said plurality of switching elements, said detection of said closure of said second one of plurality of switching element being based on a presence of said predetermined row voltage level during monitoring of said plurality of column conductors.

18. The method of scanning a switch matrix in accordance with claim 17, wherein:

said plurality of switching elements includes a momentary push button.

19. The method of scanning a switch matrix in accordance with claim 17, wherein:

said plurality of switching elements includes a persistent switch.

a 11
10 14 20. The method of scanning a switch matrix in accordance with claim 17, wherein:

said plurality of switching elements includes a momentary push button and a persistent switch.
